









COLUMN (J)

B: BOOLEAN FUNCTION

|         |   |   |   |   |   |  |   |   |
|---------|---|---|---|---|---|--|---|---|
| OBJECT  |  |  |  |  |  |  |  |  |
| OP-CODE | 000   | 001   | 010   | 011   | 100   | 101  | 110   | 111   |

GEOMETRIC LAYOUT OF DEVICE FOR N = 4

FIG. 1

**BEST AVAILABLE COPY**

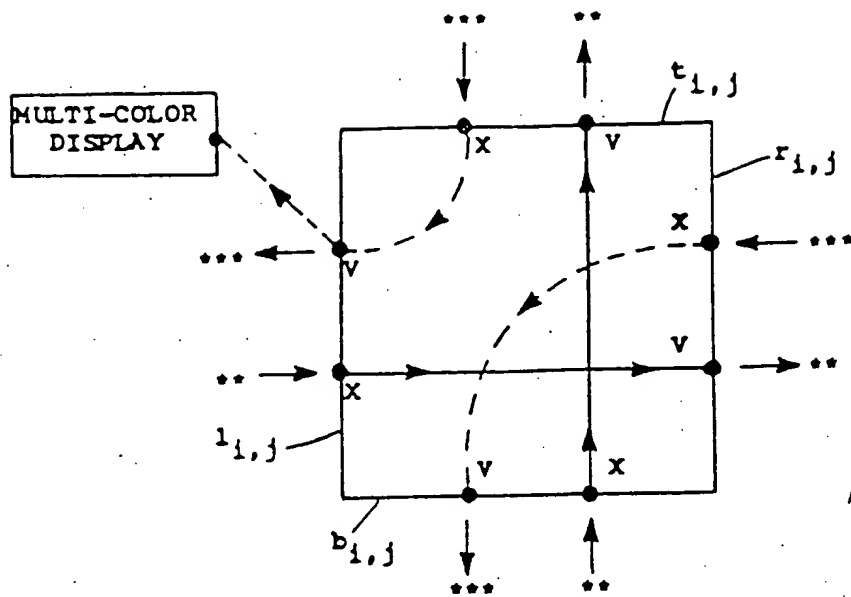


FIG. 2a

SWITCH  $W_{i,j}$  ON ("1")

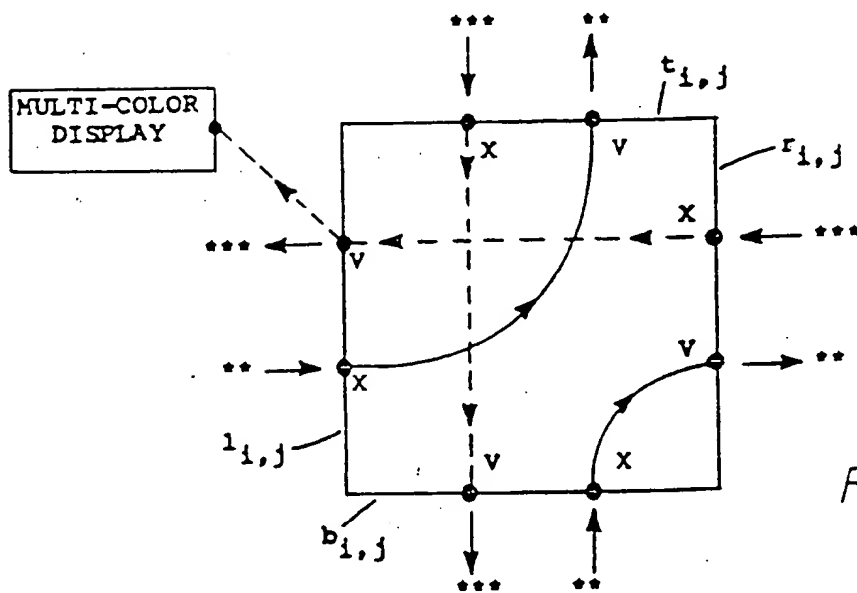
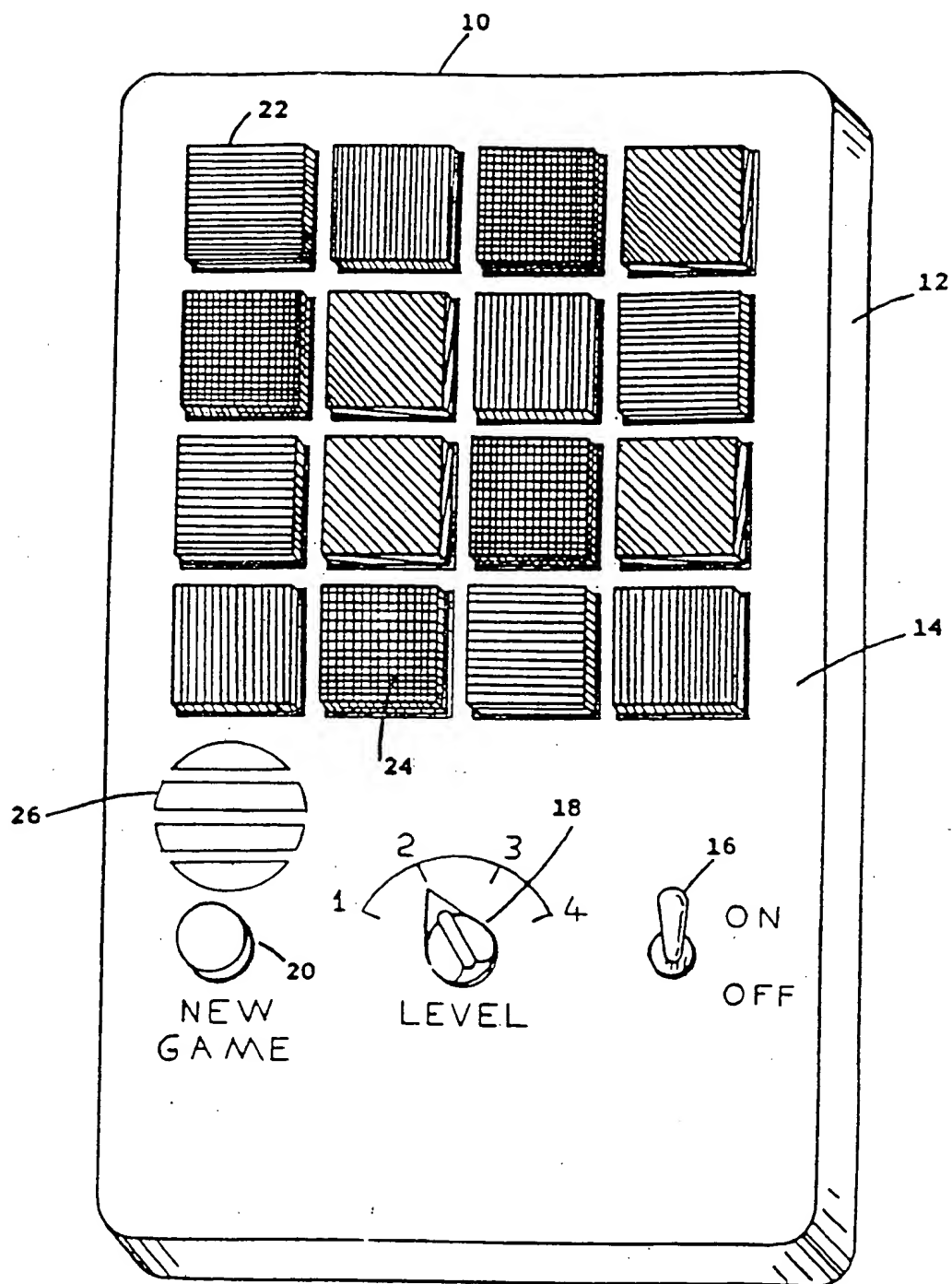


FIG. 2b

SWITCH  $W_{i,j}$  OFF ("0")

LEGEND:  $**$  OP-CODE  
 $***$  COLOR CODE

ROUTING SQUARE  $S_{i,j}$



HAND HELD LOGIC GAME DEVICE

FIG. 3

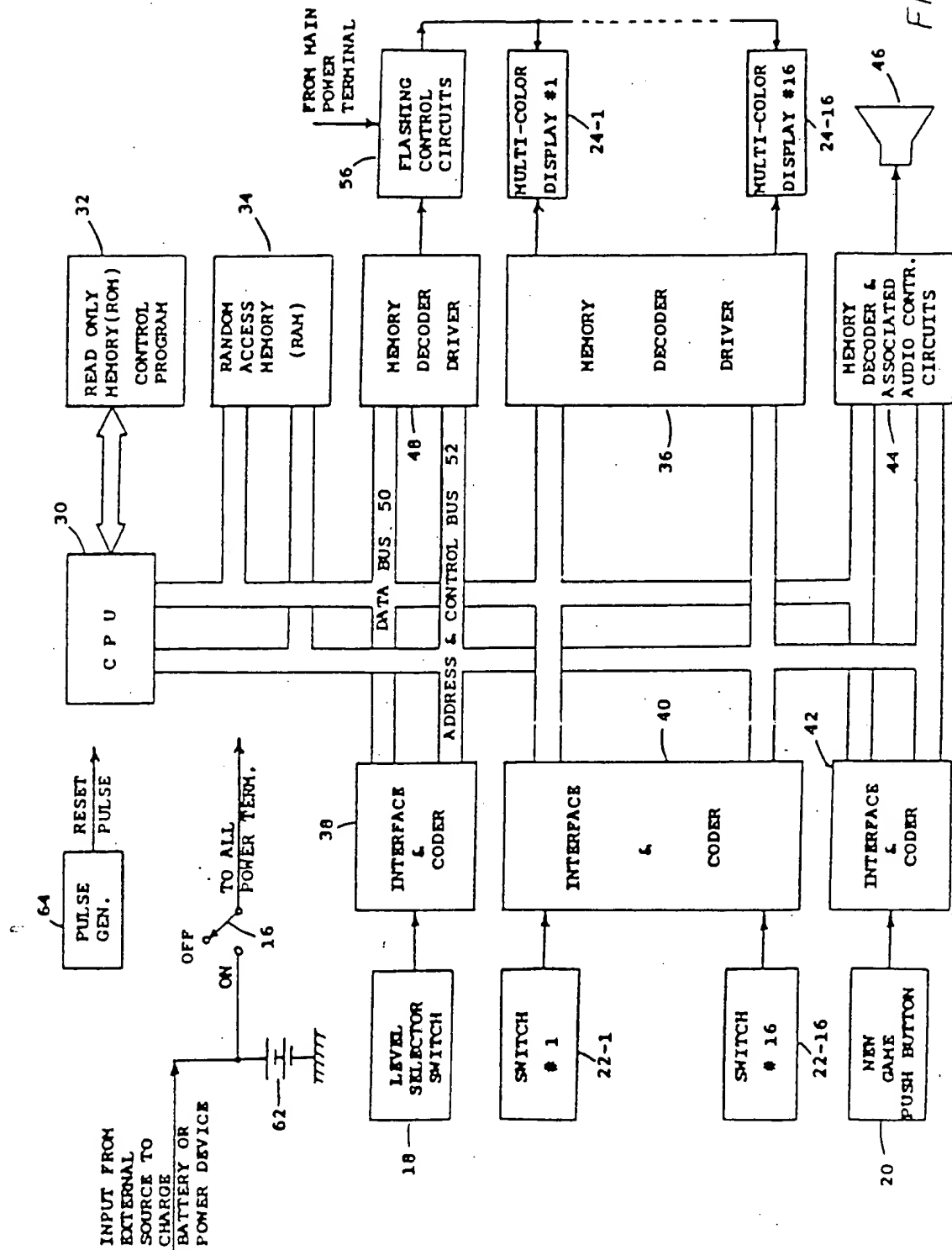


FIG. 4

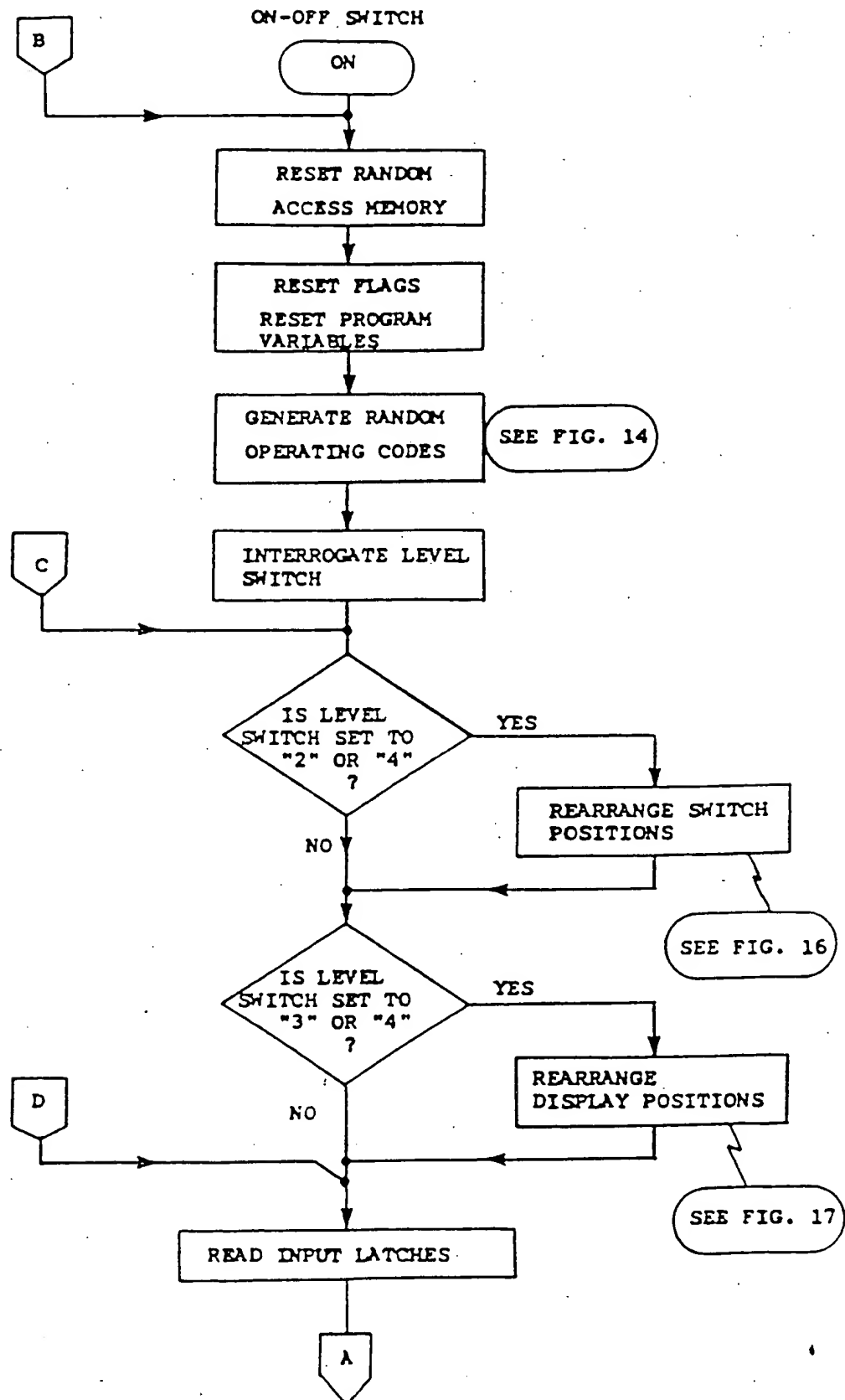


FIG. 5

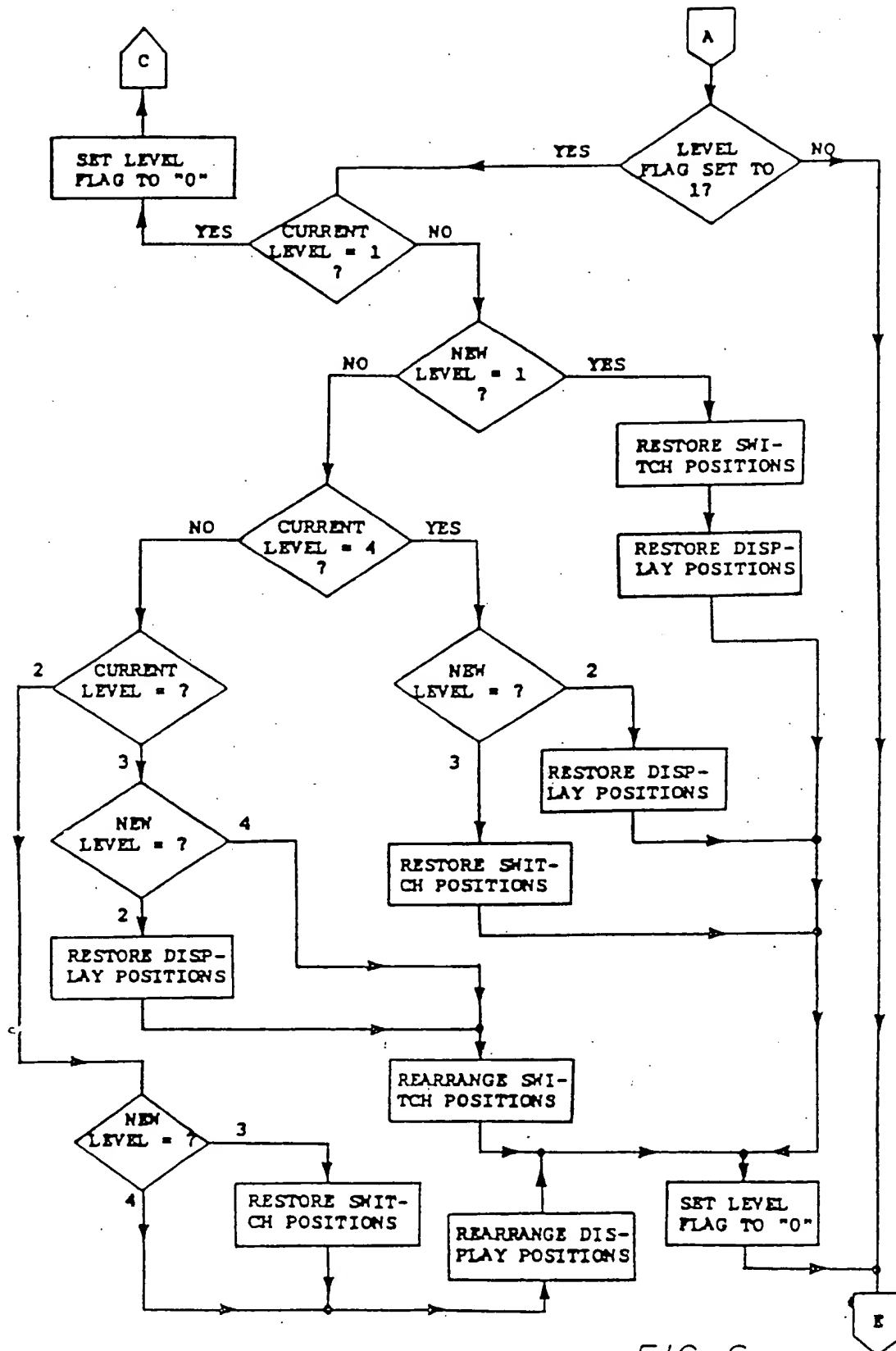


FIG. 6

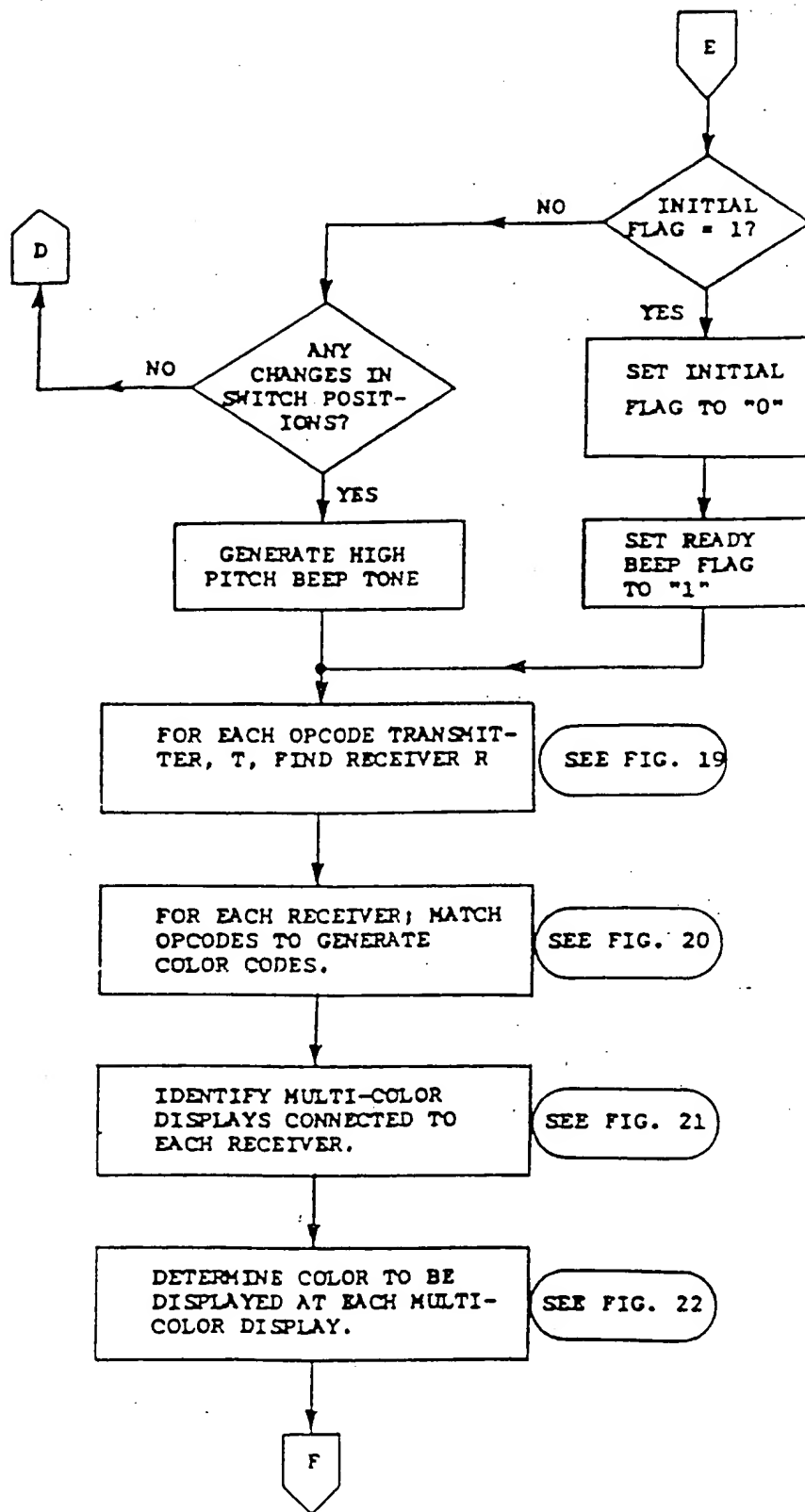


FIG. 7

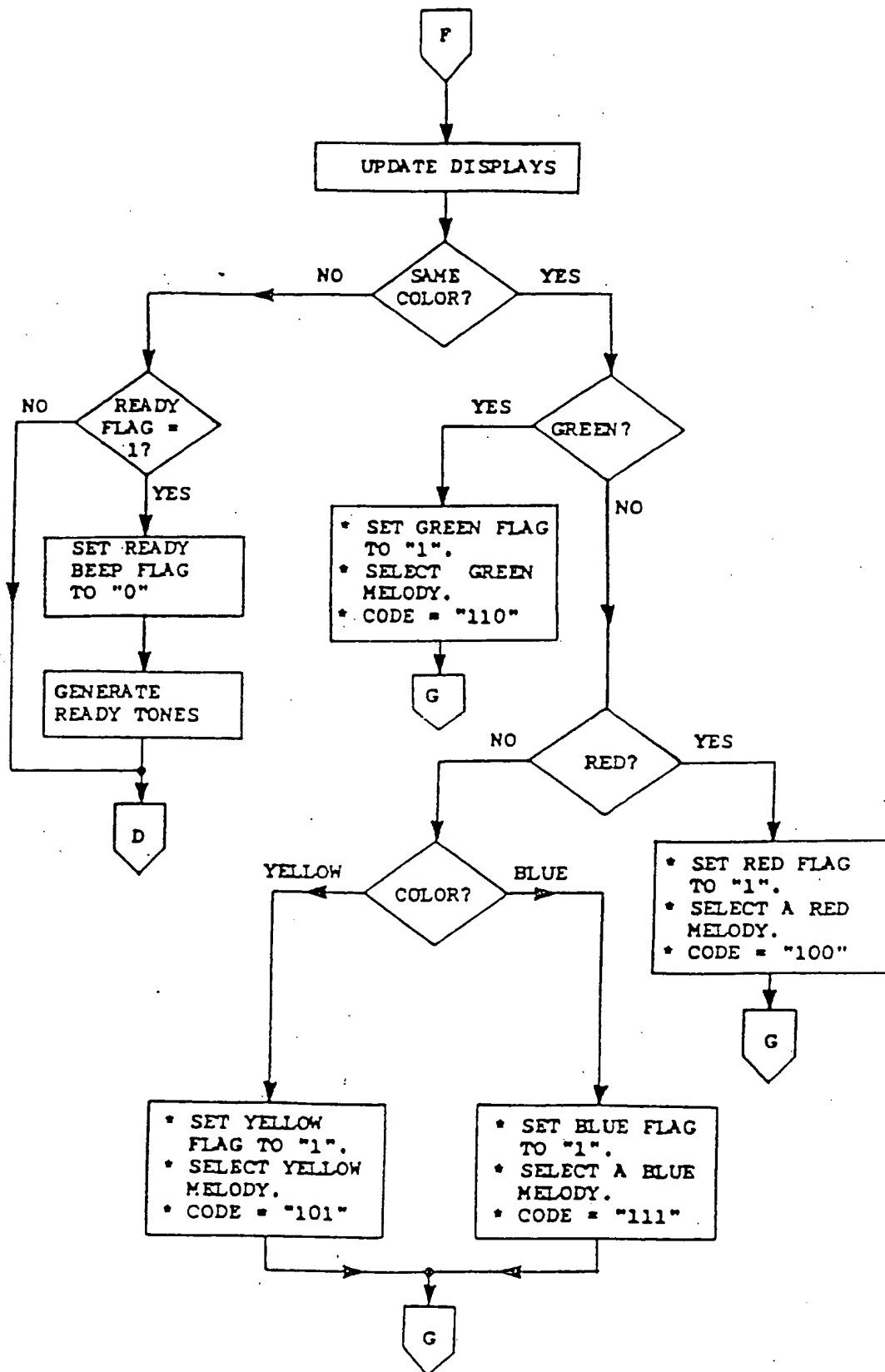


FIG. 8



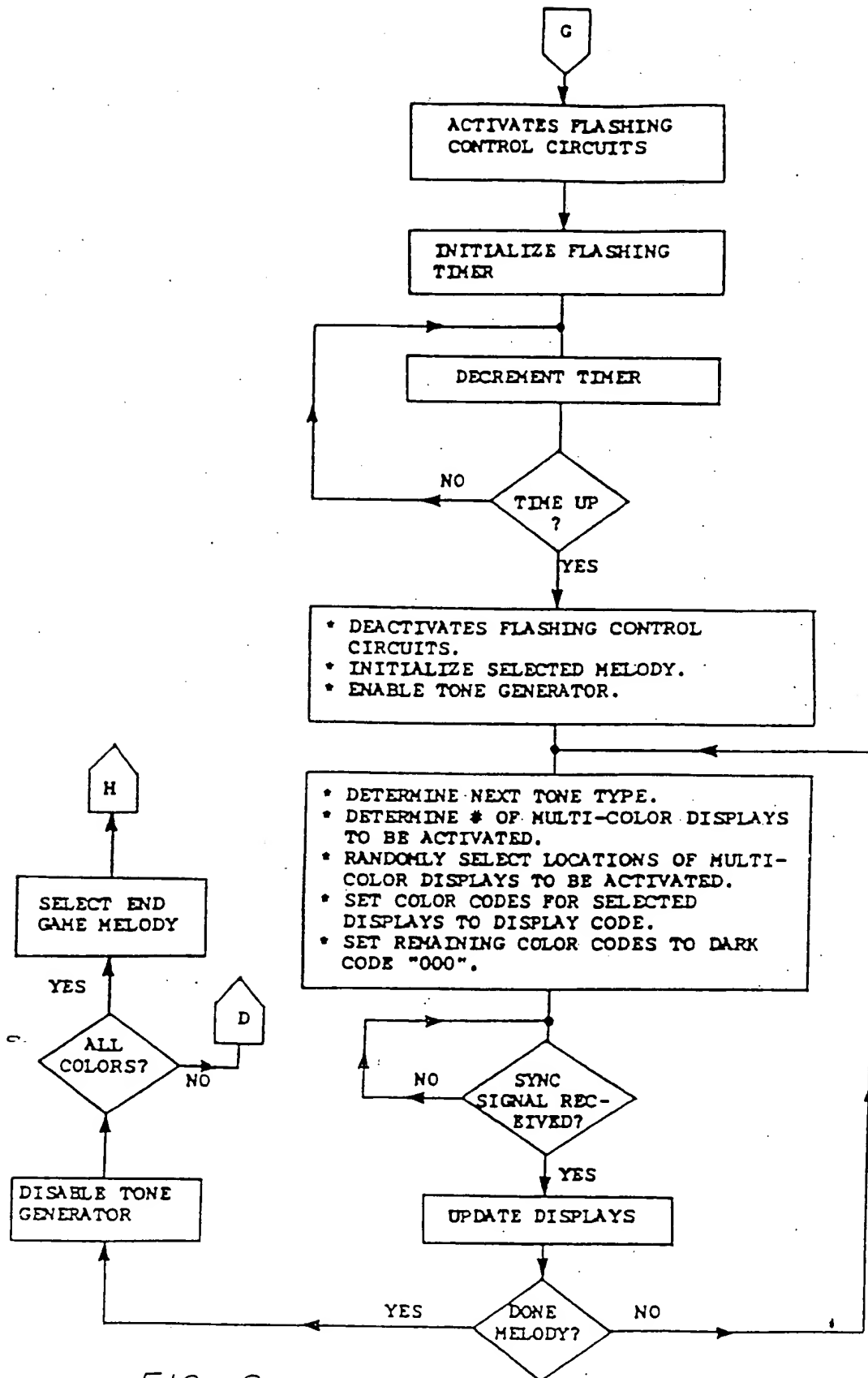


FIG. 9

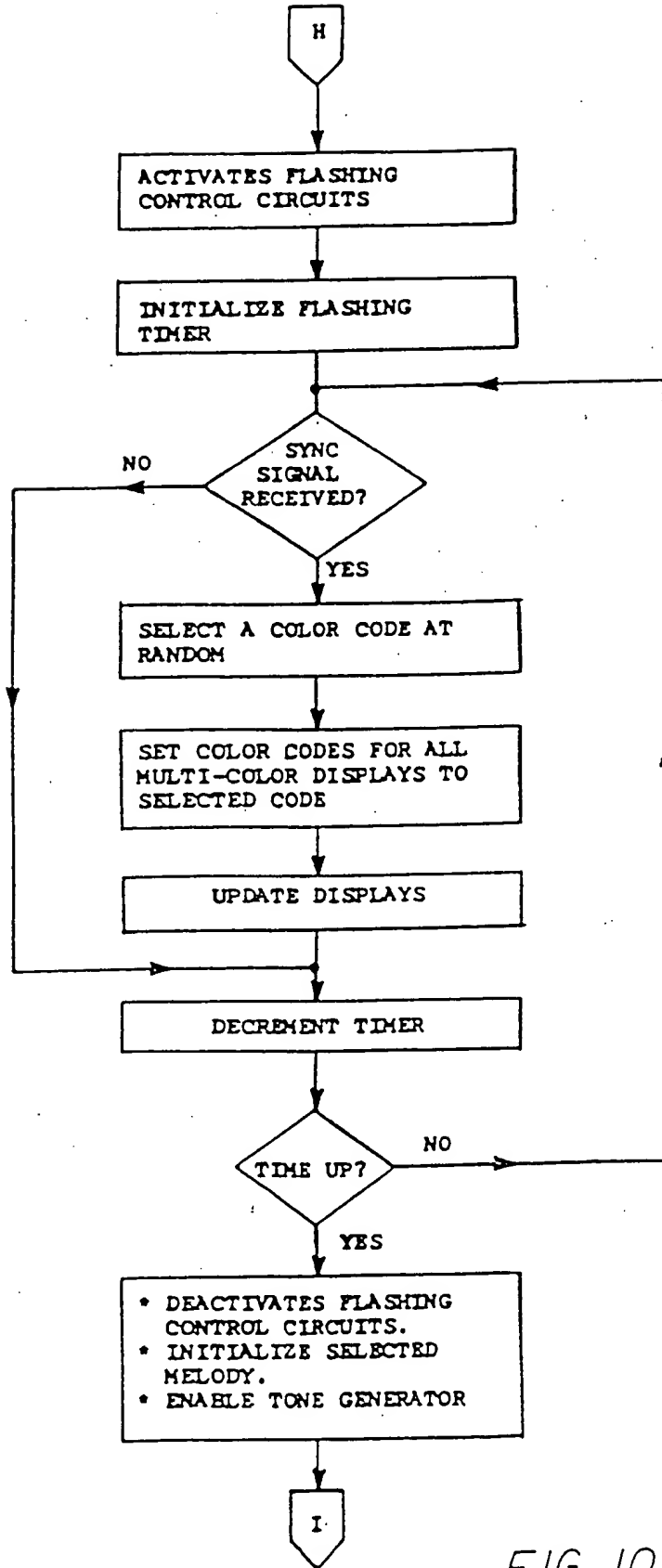


FIG. 10

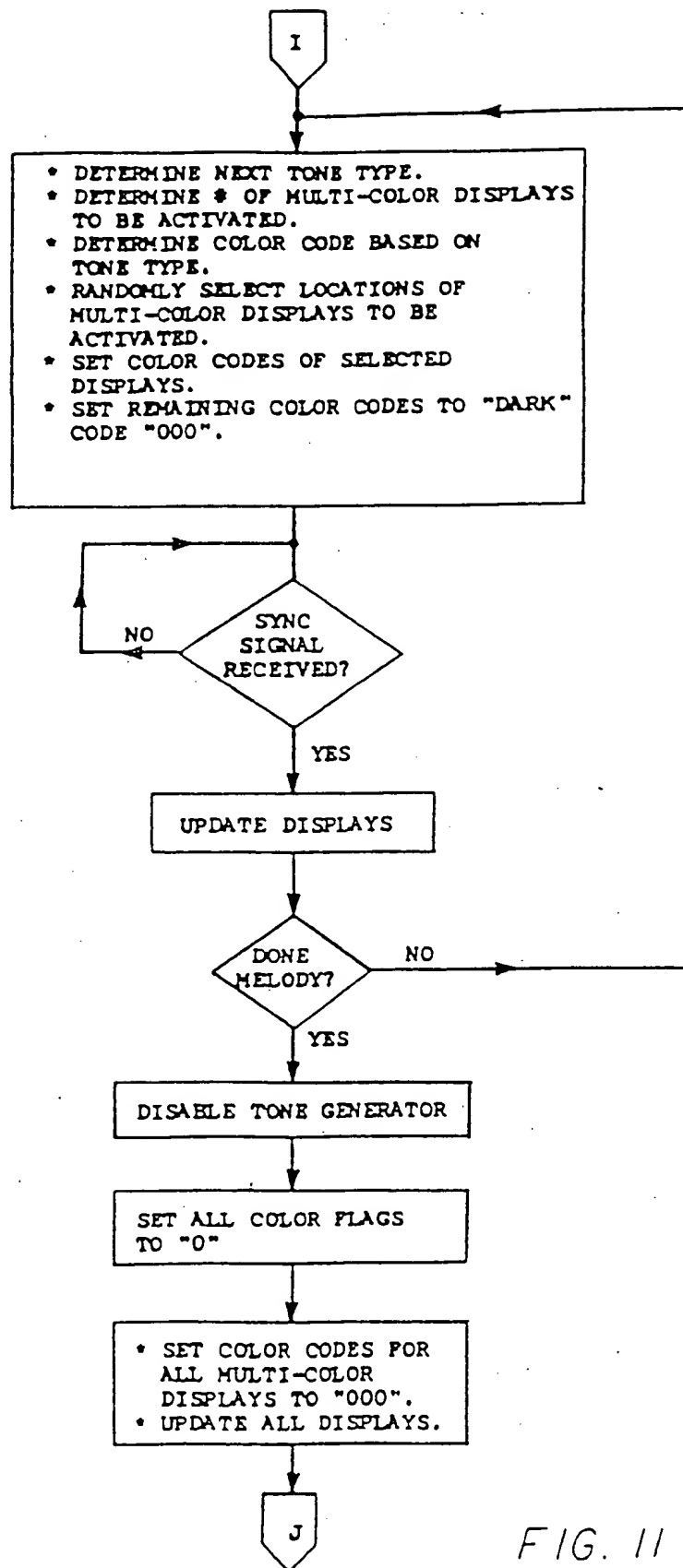


FIG. 11

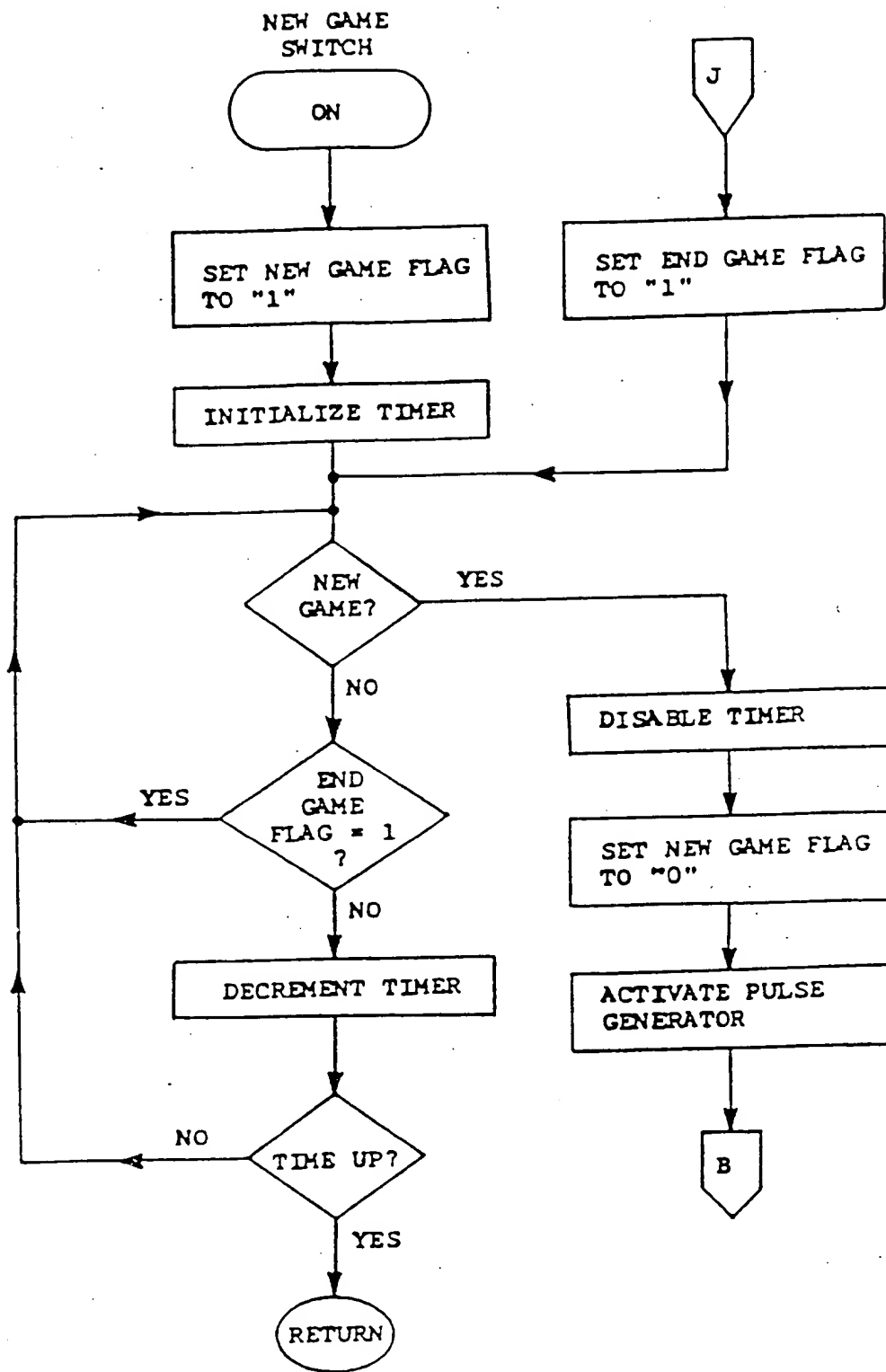


FIG. 12

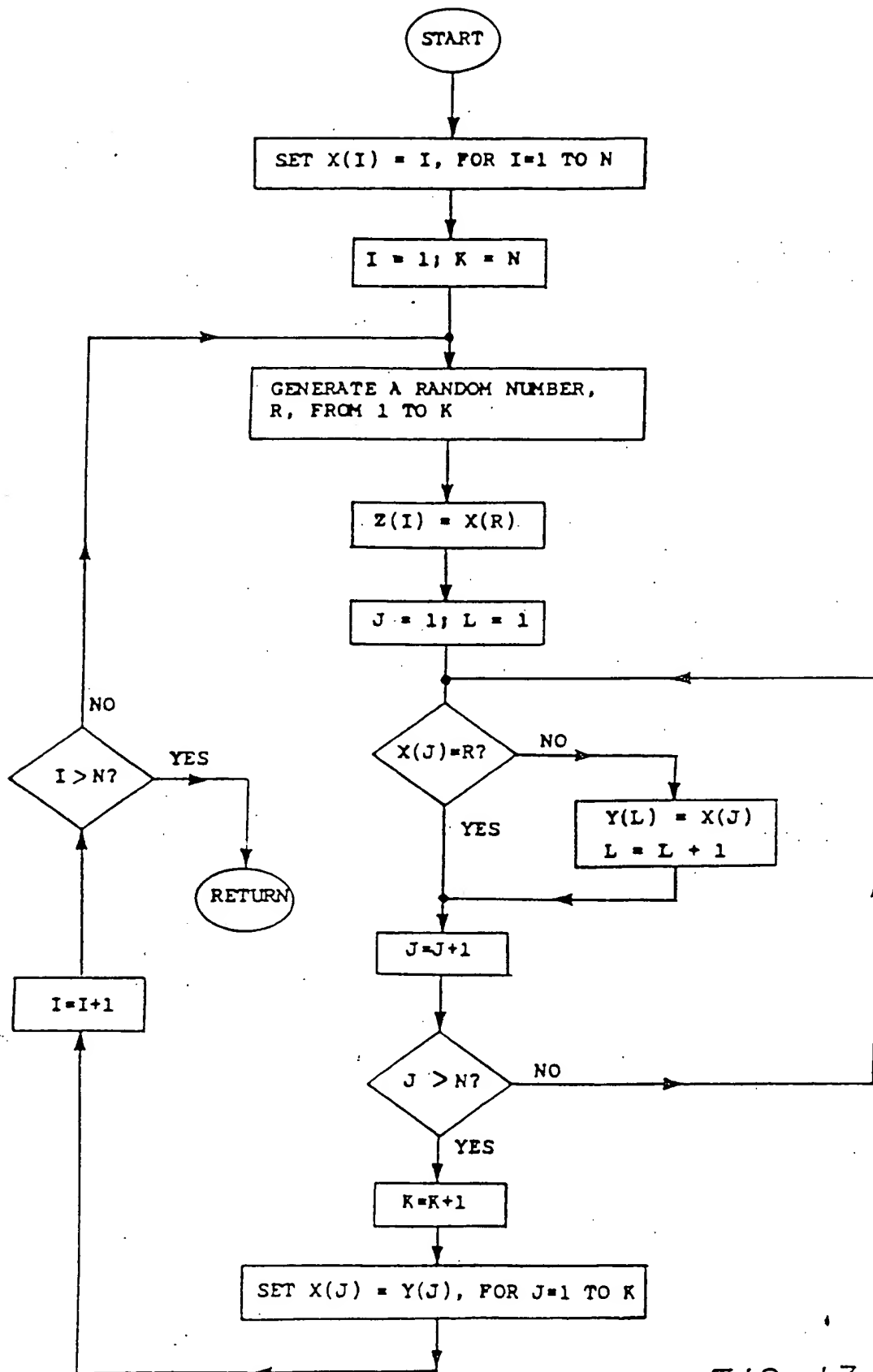


FIG. 13

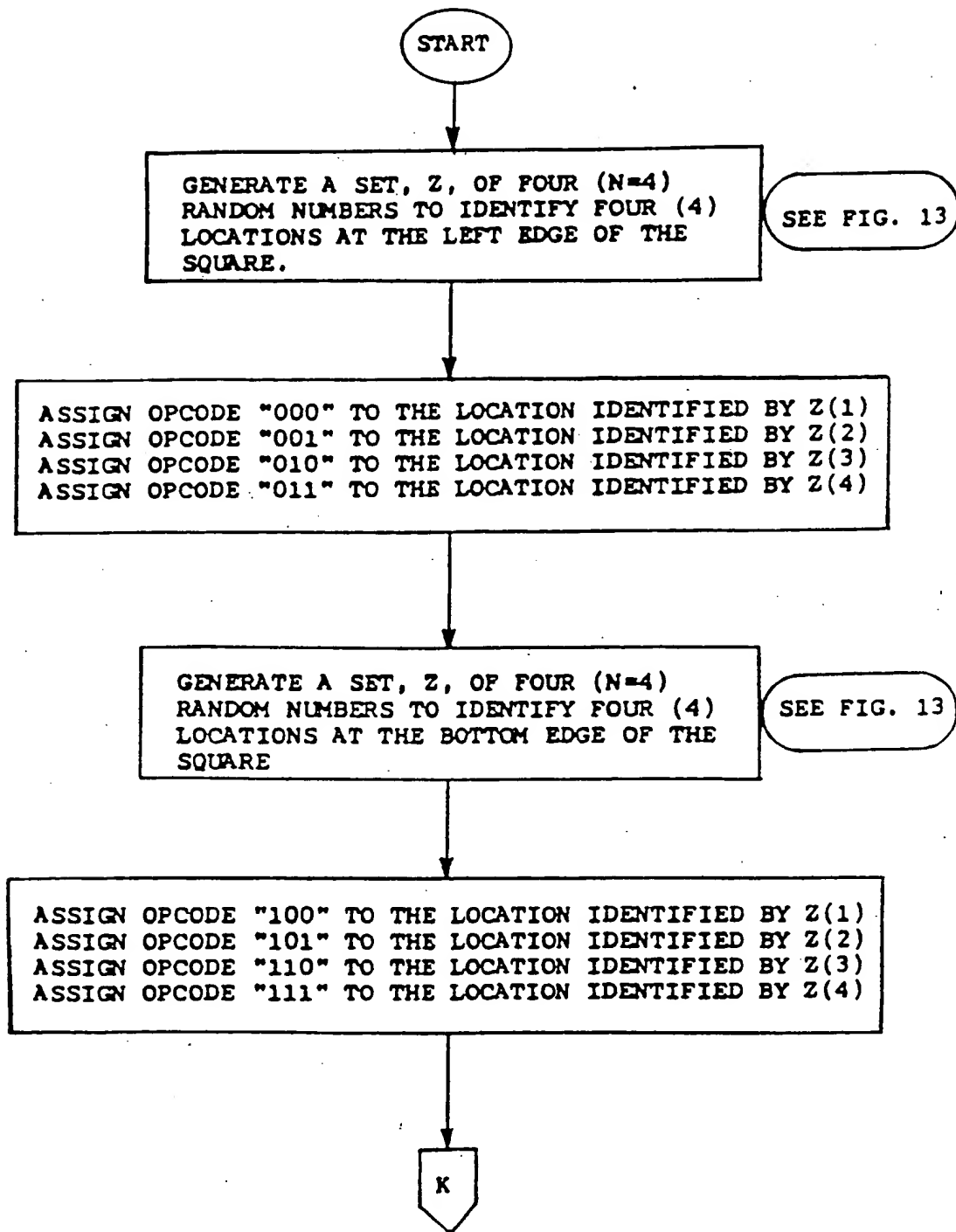


FIG. 14

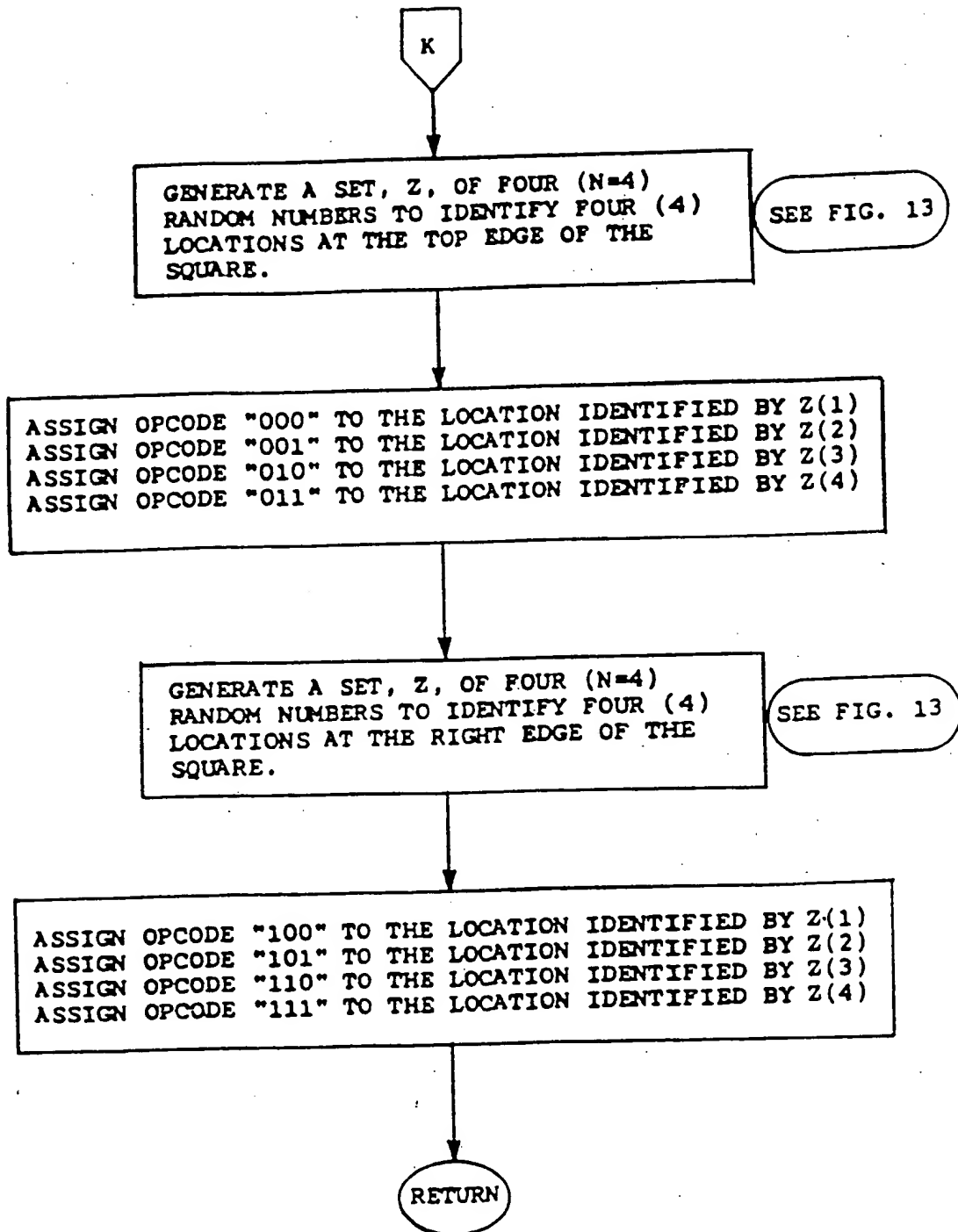


FIG. 15

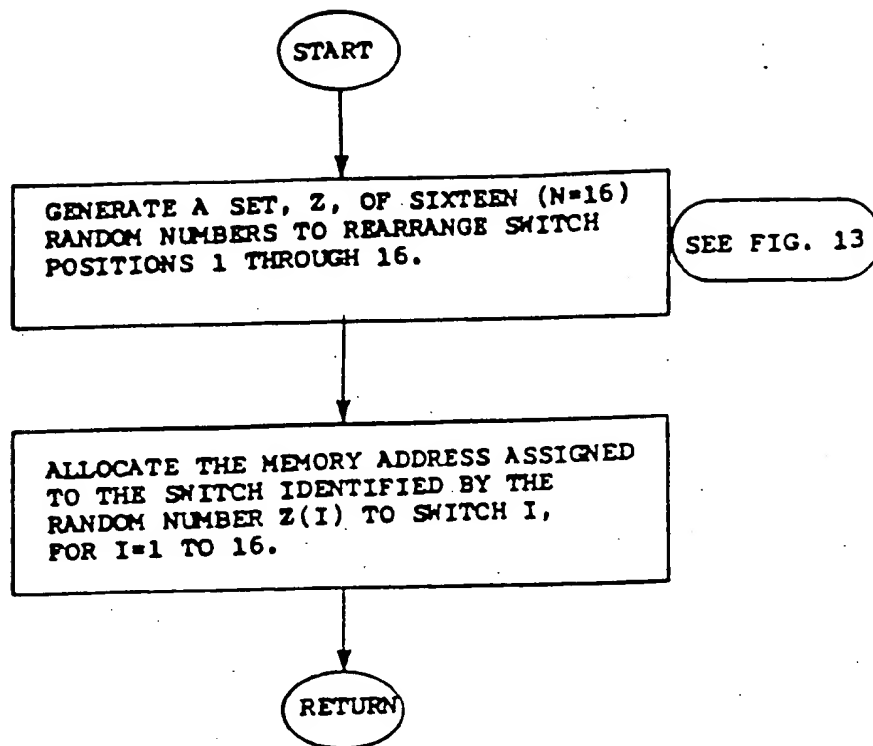


FIG. 16

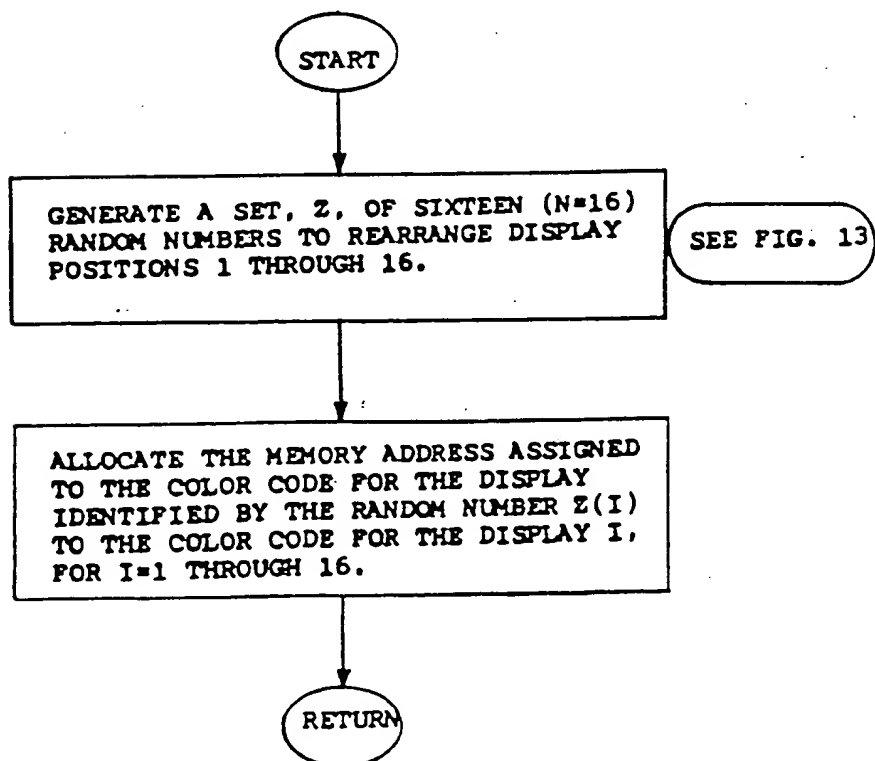


FIG. 17



## REPLACEMENT SHEET

### LEGEND

- N** : DIMENSION OF LOGIC GAME = NUMBER OF PREDETERMINED  
COLORS WHICH MAY BE DISPLAYED, (EXCLUDED REFLECTED  
COLOR WHEN DISPLAY IS DARK)  
= 4 (FOR THE PREFERRED EMBODIMENT)
- n** : NUMBER OF BINARY BITS IN OPCODE AND COLOR CODE  
=  $\ln N + 1 = 3$  (FOR THE PREFERRED EMBODIMENT)
- I** : ROW NUMBER I, I = 1, ..., N
- J** : COLUMN NUMBER J, J = 1, ..., N
- DIR** : ROUTE DIRECTION BETWEEN TWO ADJACENT ROUTING SQUARES;  
"R" DENOTES RIGHT  
"U" DENOTES UP  
"L" DENOTES LEFT  
"D" DENOTES DOWN
- T** : OPCODE TRANSMITTER; T = 1, ..., 2N
- R** : OPCODE RECEIVER; R = 1, ..., 2N
- RC(T)** : RECEIVER CONNECTED TO TRANSMITTER "T"
- TC(R)** : TRANSMITTER CONNECTED TO RECEIVER "R"
- W(I,J)** : STATUS OF SWITCH LOCATED AT ROW "I" AND COLUMN "J," OR  
STATUS OF ROUTING SQUARE AT ROW "I" AND COLUMN "J"
- TCODE(T)** : OPCODE AT TRANSMITTER "T"
- RCODE(R)** : OPCODE AT RECEIVER "R"
- C(R)** : COLOR CODE AT RECEIVER "R"
- x(i)** : THE *i*th BIT OF OPCODE "X"
- y(i)** : THE *i*th BIT OF OPCODE "Y"
- cb(i)** : THE *i*th BIT OF COLOR CODE "C"
- C1(I,J)** : COLOR CODE AT THE RIGHT EDGE OF THE ROUTING SQUARE  
LOCATED AT ROW "I" AND COLUMN "J"
- C2(I,J)** : COLOR CODE AT THE TOP EDGE OF THE ROUTING SQUARE  
LOCATED AT ROW "I" AND COLUMN "J"
- C(I,J)** : COLOR CODE SELECTED FOR DISPLAY AT THE ROUTING SQUARE  
LOCATED AT ROW "I" AND COLUMN "J"
- $\oplus$  : EXCLUSIVE OR BOOLEAN FUNCTION
- $\odot$  : EXCLUSIVE NOR BOOLEAN FUNCTION

### EXPLANATION OF PROGRAM VARIABLES OF FIGS. 19 – 22

**NOTE:**

\* SEE FIGURE 18 FOR EXPLANATION OF PROGRAM VARIABLES.

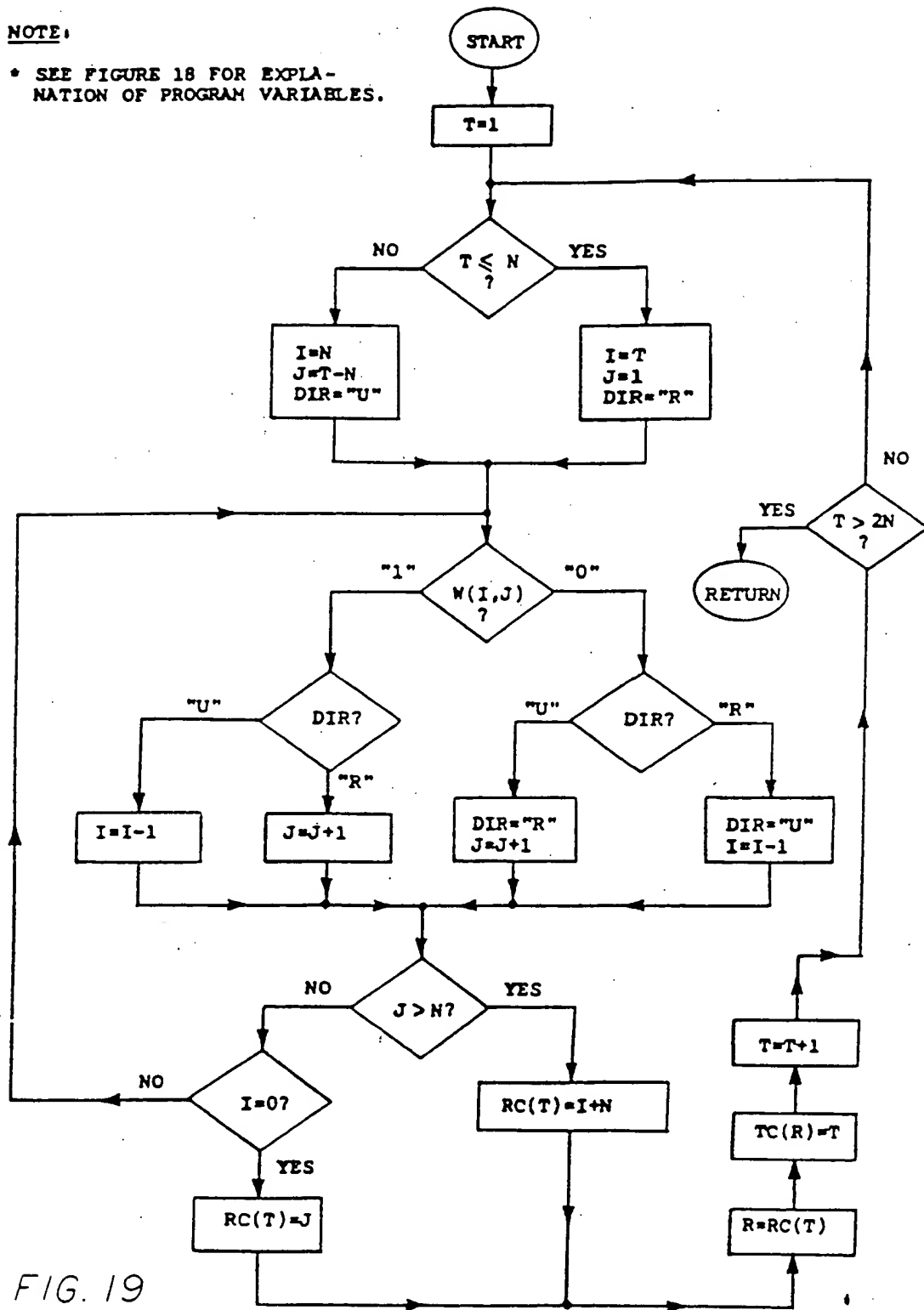
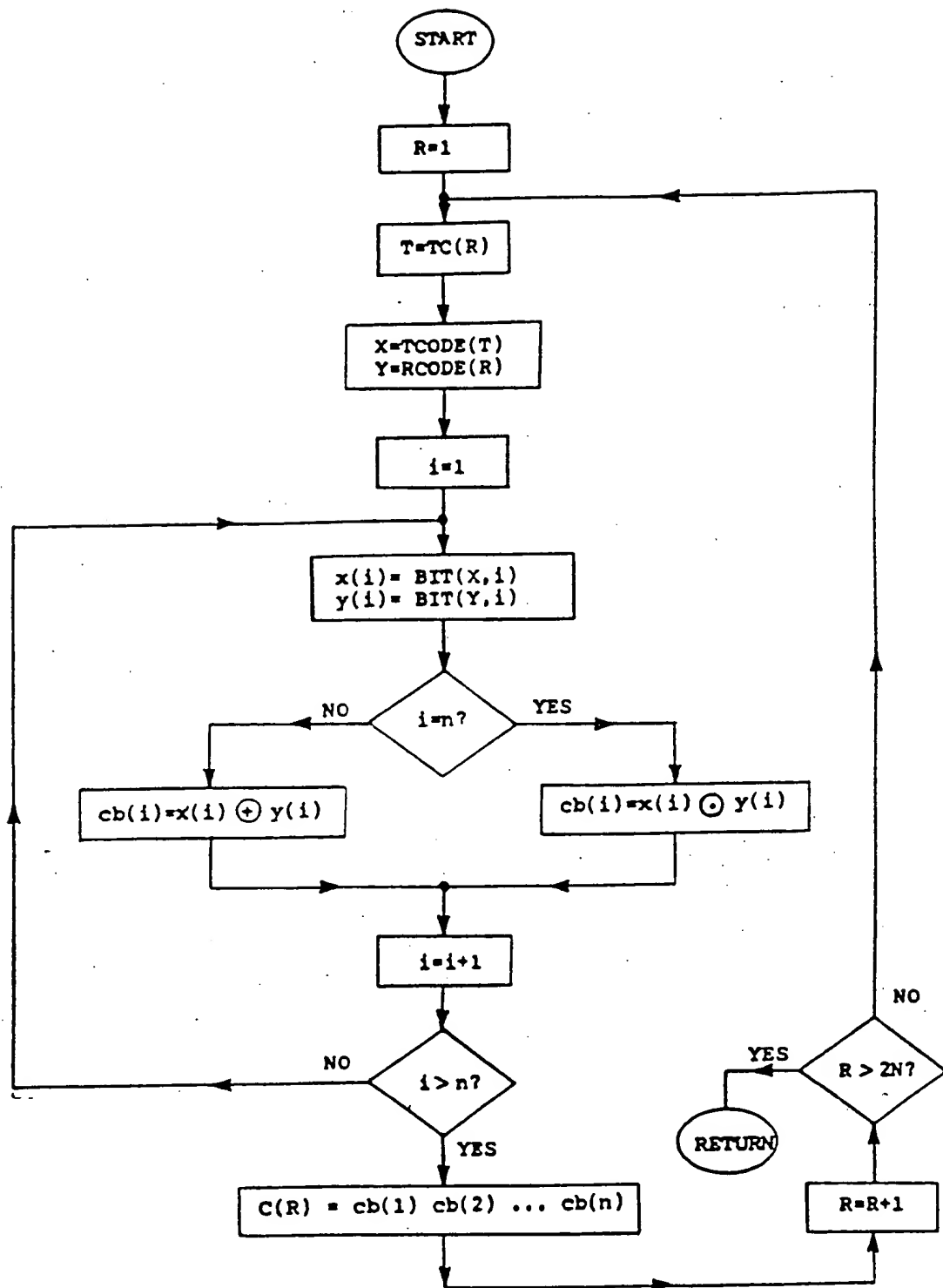


FIG. 19



NOTE:

\* SEE FIGURE 18 FOR EXPLANATION  
OF PROGRAM VARIABLES.

FIG. 20

**NOTE:**

- SEE FIGURE 18 FOR EXPLANATION OF PROGRAM VARIABLES.

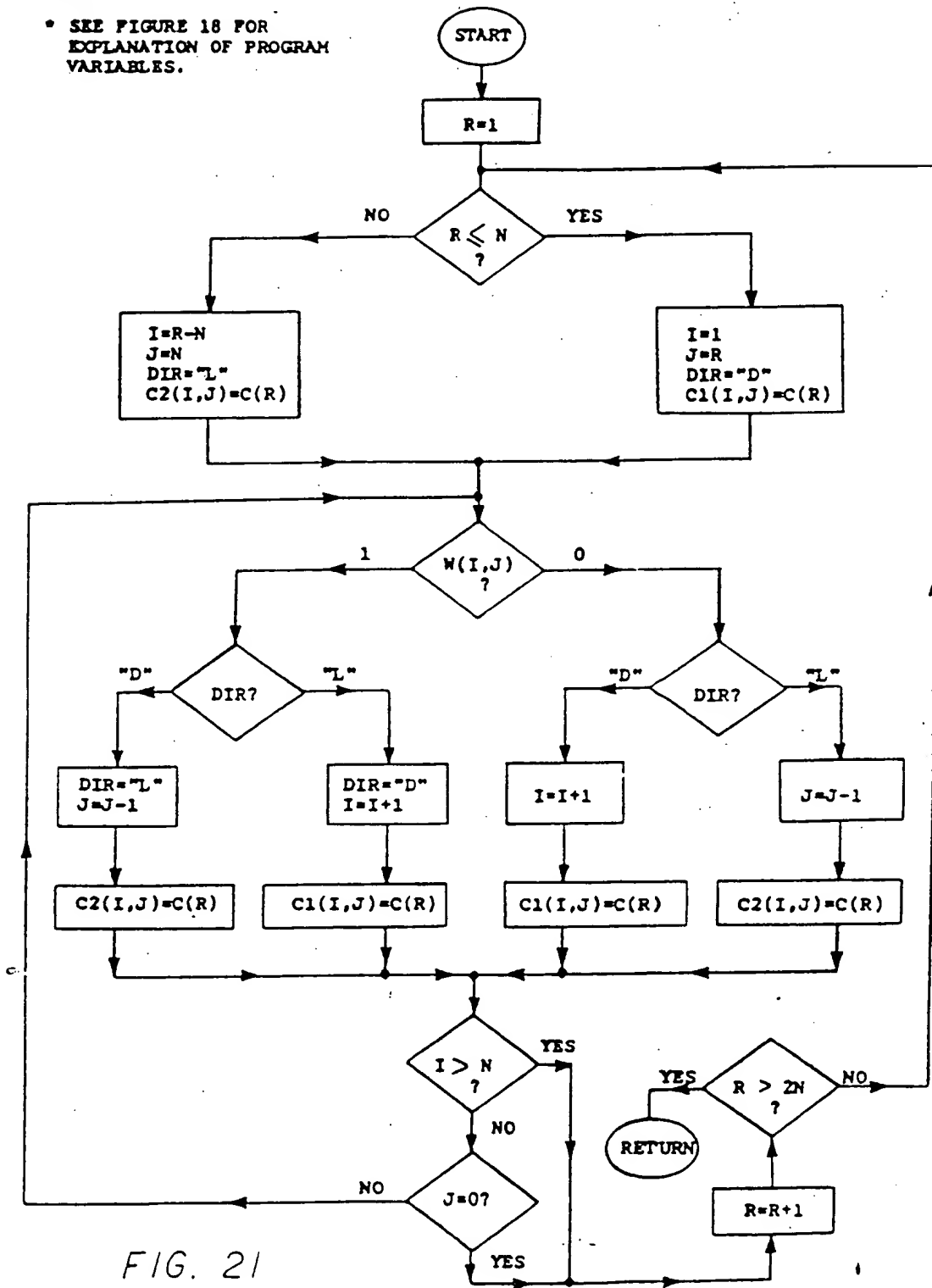
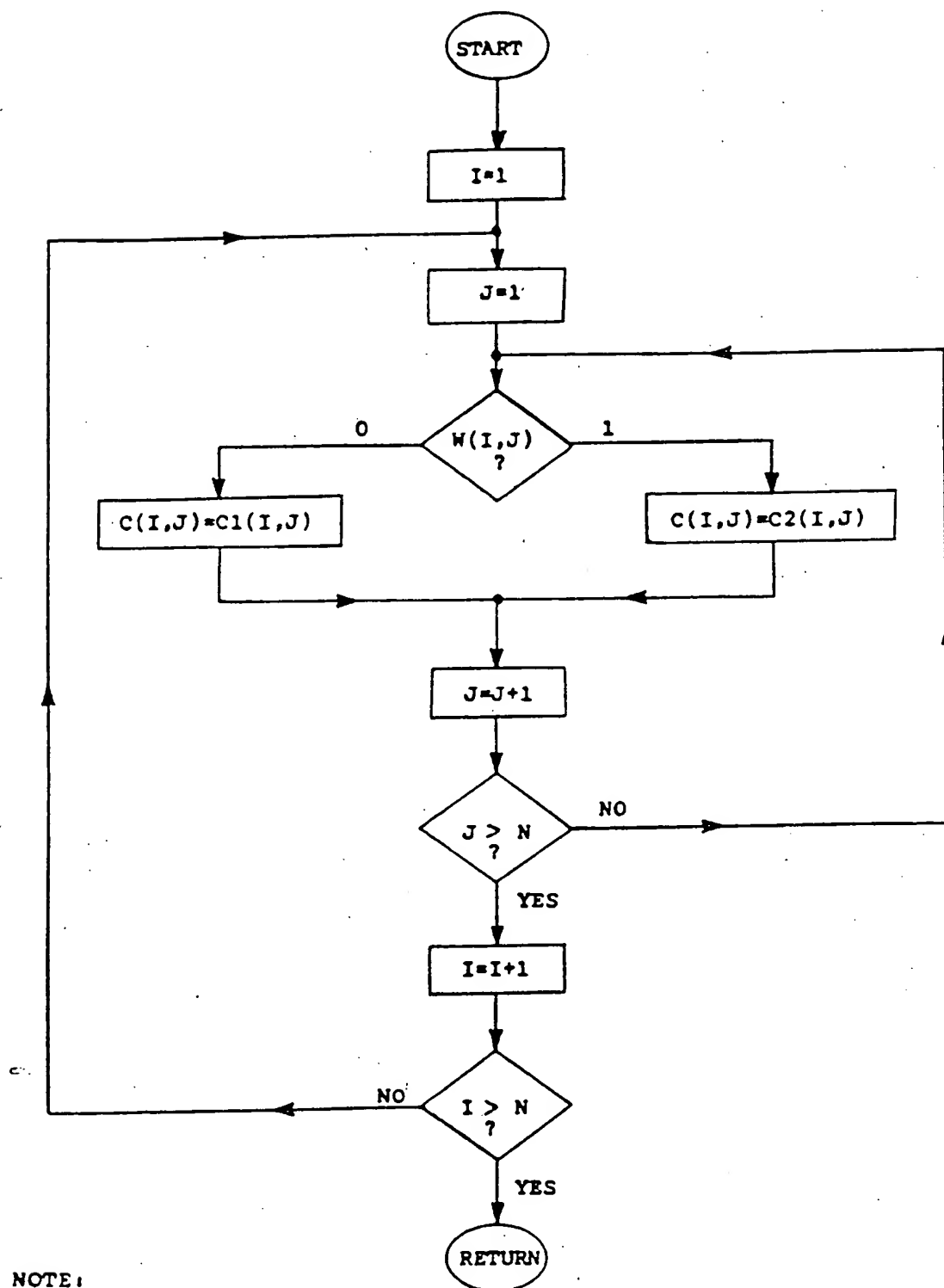


FIG. 21




































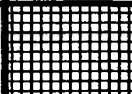

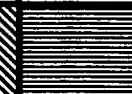
**NOTE:**

\* SEE FIGURE 18 FOR EXPLANATION  
OF PROGRAM VARIABLES.

FIG. 22

# REPLACEMENT SHEET

| OPCODE | 0   | 0   | 0   | 0   | 1  | 1   | 1   | 1   |
|--------|---|---|---|---|--|---|---|---|
|        | 0   | 0   | 1   | 1   | 0  | 0   | 1   | 1   |
|        | 0   | 1   | 0   | 1   | 0  | 1   | 0   | 1   |
| 0 0 0  |  |  |  |  |  |   |   |   |
| 0 0 1  |  |  |  |  |  |   |   |   |
| 0 1 0  |  |  |  |  |  |   |   |   |
| 0 1 1  |  |  |  |  |  |   |   |   |
| 1 0 0  |   |   |   |   |   |   |   |   |
| 1 0 1  |   |   |   |   |  |  |  |  |
| 1 1 0  |   |   |   |   |  |  |  |  |
| 1 1 1  |   |   |   |   |  |  |  |  |

| COLOR CODE | 1 0 0   | 1 0 1   | 1 1 0  | 1 1 1   | 0 - - |
|------------|---|---|--|---|-------|
| COLOR      |  |  |  |  |       |

COLOR ASSIGNMENT FOR N = 4

FIG. - 23 -

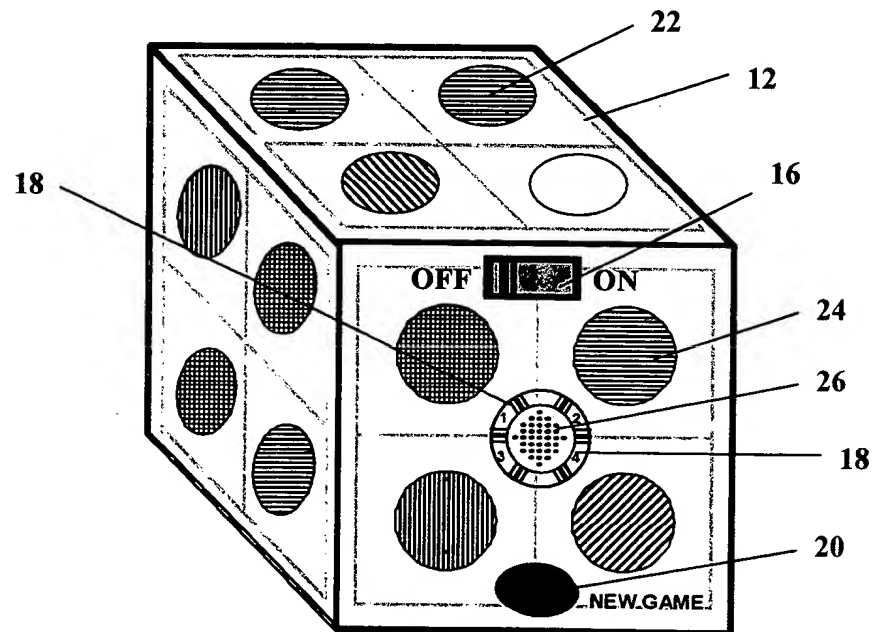
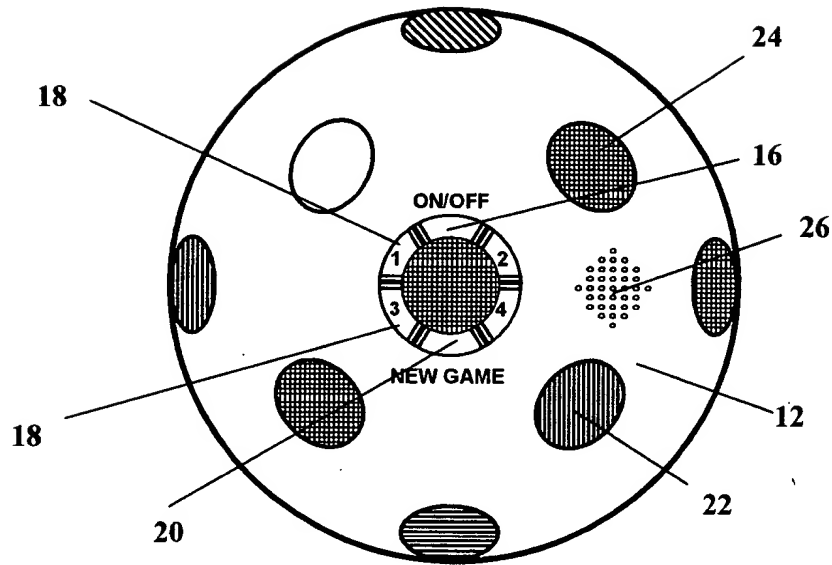
# REPLACEMENT SHEET

| OPCODE | 0000 | 0001 | 0010 | 0011 | 0100 | 0101 | 0110 | 0111 | 1000 | 1001 | 1010 | 1011 | 1100 | 1101 | 1110 | 1111 |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0000   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0001   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0010   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0011   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0100   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0101   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0110   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0111   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1000   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1001   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1010   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1011   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1100   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1101   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1110   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1111   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

| COLOR CODE | 1000 | 1001 | 1010 | 1011 | 1100 | 1101 | 1110 | 1111 | 0— |
|------------|------|------|------|------|------|------|------|------|----|
| COLOR      |      |      |      |      |      |      |      |      |    |

COLOR ASSIGNMENT FOR N = 8

# NEW SHEET



MAPPING OF INDICATORS ON 3 DIMENSIONAL CONFIGURATION



# NEW SHEET

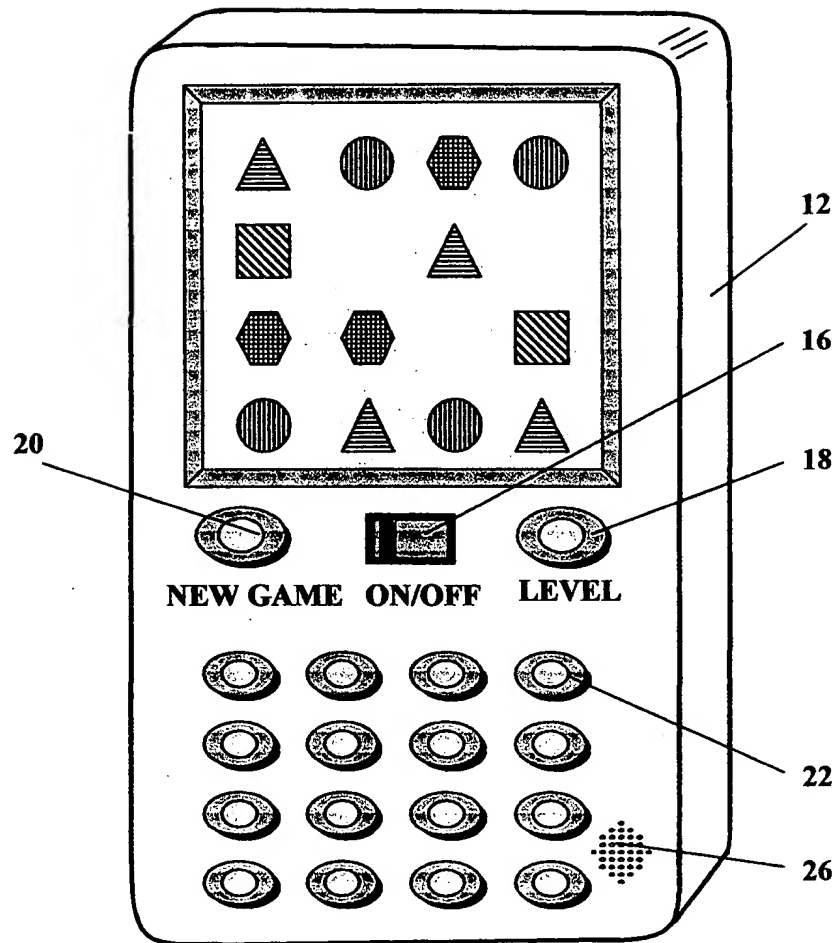
| OPCODE | 0<br>0<br>0 | 0<br>0<br>1 | 0<br>1<br>0 | 0<br>1<br>1 | 1<br>0<br>0 | 1<br>0<br>1 | 1<br>1<br>0 | 1<br>1<br>1 |
|--------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 0 0 0  |             |             |             |             |             |             |             |             |
| 0 0 1  |             |             |             |             |             |             |             |             |
| 0 1 0  |             |             |             |             |             |             |             |             |
| 0 1 1  |             |             |             |             |             |             |             |             |
| 1 0 0  |             |             |             |             |             |             |             |             |
| 1 0 1  |             |             |             |             |             |             |             |             |
| 1 1 0  |             |             |             |             |             |             |             |             |
| 1 1 1  |             |             |             |             |             |             |             |             |

| COLOR CODE | 1 0 0 | 1 0 1 | 1 1 0 | 1 1 1 | 0 - - |
|------------|-------|-------|-------|-------|-------|
| COLOR      |       |       |       |       |       |

**COLOR ASSIGNMENT FOR N = 4**  
**(Color codes assigned to 2 colors)**

**FIG. - 26 -**

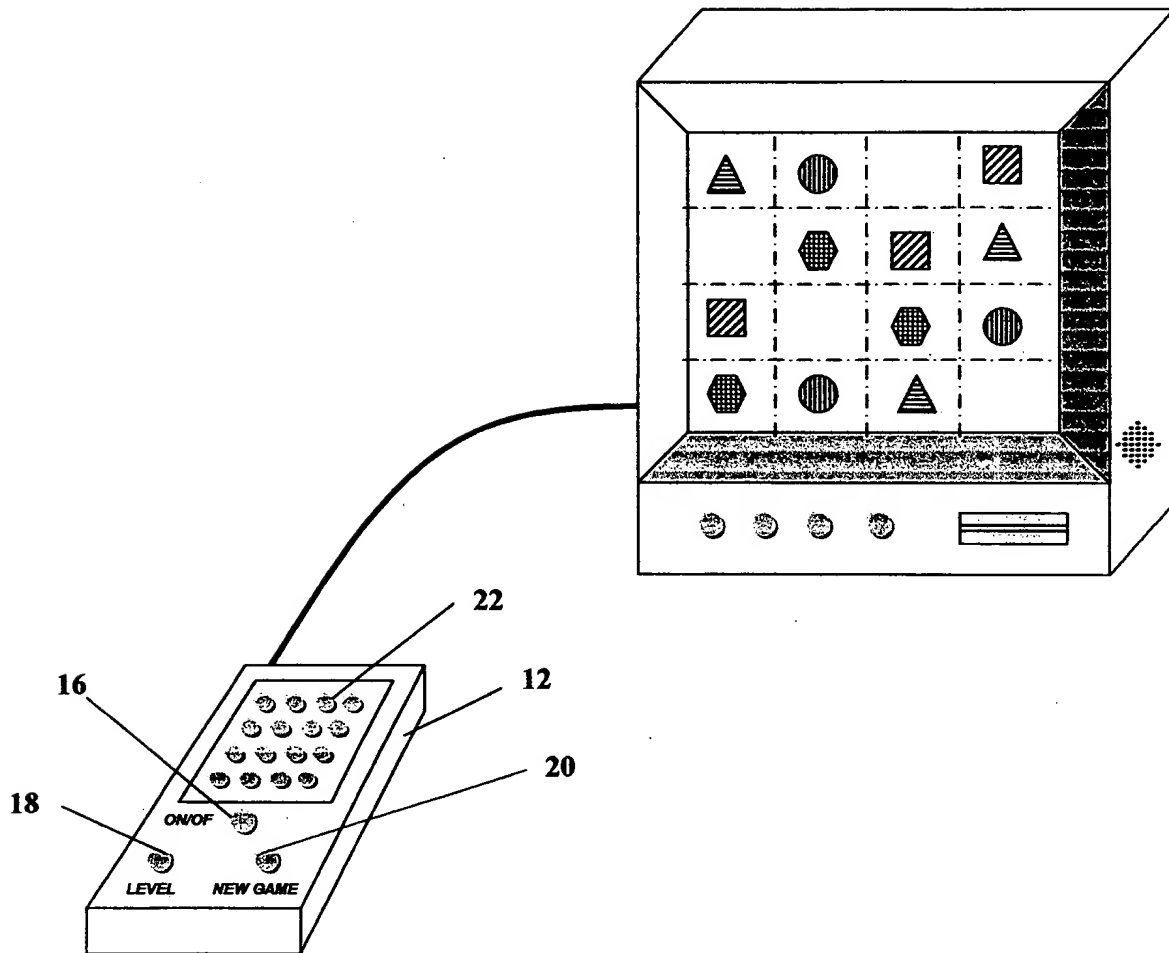
NEW SHEET



ALTERNATE EMBODIMENT USING LCD SCREEN

FIG. - 27 -

NEW SHEET



CONNECTION TO VIDEO MONITOR

FIG. - 28 -

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